DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the rotator of a salient pole form dynamo-electric machine.

[0002]

[Description of the Prior Art]The partial front view and drawing 6 which drawing 5 shows an example of the rotator of the conventional salient pole form dynamo-electric machine are a vertical section enlarged detail of drawing 5. In drawing 5 and drawing 6, the cooling fan 13 is symmetrically pressed fit to the both sides of the shaft orientations of the field core 4 of four poles where the rotator 1 which had both ends supported via a bearing by the stator frame shown with the dashed dotted line of drawing 6 protruded on the periphery of the rotor axis 2.

[0003]It is fixed to the peripheral face of the field magnetic iron heart 4 with the bolt which the magnetic pole 3 does not illustrate, and the field coil 5 is inserted in the field magnetic iron heart 4. The top insulating collar 6 is inserted between each field coil 5 and the magnetic pole 3, and the lower insulating collar 12 is installed in the axis side of each field coil 5.

[0004]The V character-like coil bracket electric insulating plate 10 is installed in the contiguity side of each field coil 5, and the section is established for the triangular coil bracket 9 in three places in drawing 5 inside this coil bracket electric insulating plate 10.

[0005]In the ventilation flue 16 formed with the adjoining lower insulating collar 12 and the rotor axis 2. The three coil Oshiage board 8B and the six helical compression springs 7 which were manufactured by soft steel material are inserted, These helical compression springs 7, the coil Oshiage board 8B, and the coil bracket 9 and the coil bracket electric insulating plate 10, It is fixed to the rotor axis 2 with the bolt 11 inserted into these, as a result, each field coil 5 is pressed by the field magnetic iron heart 4, and that shape is maintained to the centrifugal force accompanying rotation of this rotator.

[0006]In the rotator of the salient pole form dynamo-electric machine constituted in this way, With the cooling fan 13 which rotates with the rotor axis 2, as shown in the arrow of the right and left of drawing 5, it flows through a part of air inside a stator frame into the stator side which is not illustrated through between each adjoining field coil 5, and other parts flow through and, similarly flow through the ventilation flue 16 into the stator side.

[0007]By the way, also in the rotator of the salient pole form dynamo-electric machine constituted in this way, in order for raising the chilling effect of a field coil to raise the rating of a dynamo-electric machine and to prolong a life, it becomes indispensable requirements. On the other hand, an outside is reduced and it is also requested by the user that the fall of an installation charge including transportation should be aimed at.

[0008]

[Problem(s) to be Solved by the Invention]However, in the salient pole form dynamo-electric machine constituted in this way, Since the both ends of the shaft orientations of the field coil 5 and the both ends of a magnetic pole are cooled by a lot of [high-speed and] cooling wind blows shown by a thick arrow as the arrow of drawing 5 shows, Although a temperature rise value is comparatively low, since especially the center section of the field coil 5 is cooled by low-speed cooling wind blows in the small

amount shown by a thin arrow, compared with both ends, a temperature rise value becomes high.
[0009]Then, since degradation of the insulating layer of a center portion is promoted also in the field coil 5 impregnated with the epoxy resin compared with both sides, when the rise in heat of this center portion attains increase in rating, and reinforcement, it becomes an obstacle.
[0010]Then, the purpose of this invention is to obtain the rotator of the salient pole form dynamo-electric machine which can reduce the difference of the rise in heat by the part of a field coil, and can attain miniaturization and reinforcement.
[0011]
[Means for Solving the Problem]Two or more coil brackets are installed in an opposite portion of a field coil in which an invention corresponding to claim 1 was inserted in a field core, A coil aggressiveness raising board is inserted in a ventilation flue formed between a field coil and a rotor axis, A coil spring which presses a coil aggressiveness raising board to a field coil is inserted between this coil aggressiveness raising board and a rotor axis, In a rotator of a salient pole form dynamo-electric machine with which a bolt which presses a coil bracket to a field coil was inserted into a coil bracket and a coil aggressiveness raising board, and a coil spring, The length of a coil aggressiveness raising board was mostly made into length inside a field coil, and a through hole which opens between opposite portions of a ventilation flue and a field coil for free passage was formed in a coil aggressiveness raising board.
[0012]Two or more coil brackets are installed in an opposite portion of a field coil in which an invention corresponding to claim 2 was inserted in a field core, A coil aggressiveness raising implement was inserted in a ventilation flue formed between a field coil and a rotor axis, and a bolt which presses a coil bracket to a field coil used a coil aggressiveness raising implement as flat spring in a rotator of a salient pole form dynamo-electric machine inserted into a coil bracket and a coil aggressiveness raising implement.
[0013]A rotator of a salient pole form dynamo-electric machine of an invention especially corresponding to claim 3, It is characterized by both sides by the side of an opening making flat spring the shape of a section C character which contacts a field coil, and a rotator of a salient pole form dynamo-electric machine of an invention corresponding to claim 4, It is characterized by forming resin coating of a low friction coefficient in a contact surface with a coil aggressiveness raising board or a field coil of flat spring, and especially a rotator of a salient pole form dynamo-electric machine of an invention corresponding to claim 5, Material of resin coating was made into a fluoro-resin, Teflon resin, Beth Bell resin, polyimide resin, or these combination material.
[0014]By such a means, in an invention corresponding to claim 1, while reducing the number of component parts, a flow of cooling wind blows especially in a center portion of a field coil is increased, and a rise in heat is suppressed.
[0015]In an invention corresponding to claim 2 and claim 3, while reducing the number of component parts, resistance of a ventilation flue is reduced, a flow of cooling wind blows in a center portion of a field coil is increased, and a rise in heat is suppressed.
[0016]In an invention corresponding to claim 4 and claim 5, stress of an insulating material in a contact surface with a coil aggressiveness raising board or flat spring generated by elasticity accompanying energization and a stop of a field coil is stopped.
[0017]
[Embodiment of the Invention]Hereafter, one embodiment of the rotator of the salient pole form dynamo-electric machine of this invention is described with reference to drawings. It is a figure showing

a 1st embodiment of the rotator of the salient pole form dynamo-electric machine of this invention, and drawing 1 corresponds to drawing 6 shown by the Prior art, and is a figure corresponding to claim 1. Drawing 2 is a partial front view of the rotator of the salient pole form dynamo-electric machine of this invention, and is a figure corresponding to drawing 5 shown by the Prior art.

[0018]In drawing 1 and drawing 2, a different place from drawing 5 and drawing 6 which were shown by the Prior art is a manner of support of a field coil, and the lower insulating collar 12 shown by drawing 5 and drawing 6 is excluded.

[0019]The coil Oshiage board 8A is manufactured from glass strengthening polyester material, is the almost same length as the straight-line portion of the longitudinal direction of the field coil 5, and has become one between the adjoining field coils 5.

[0020]As shown in this coil Oshiage board 8A at drawing 2, two or more blow holes are formed in the outside of the coil bracket 9 of both sides between each coil bracket 9. Among these, in drawing 2, three blow holes are continuously formed in the both sides of the central coil bracket 9, and, as for three blow holes of these outsides, the interval is large at them. It is formed in the outside of the coil bracket 9 of both sides at the interval with two large blow holes.

[0021]In the salient pole form dynamo-electric machine constituted in this way, As the arrow A1 - A3 of drawing 2 show, with the cooling fan shown by drawing 5 of the Prior art. It escapes from some cooling wind blows sprayed in shaft orientations between the field coils 5 in which each magnetic pole adjoins from the both sides of the field core 4 of the rotor axis 2 between the field coils 5 which adjoin from the blow hole first formed inside the coil bracket 9 of both sides as the arrow A1 showed, and it flows out in the direction of a stator radiately.

[0022]It flows out, as similarly shown in the thick arrow A2 from the blow hole of the inside, and as shown in still thicker still arrow A3 from the blow hole formed in the both sides of the central coil bracket 9, a lot of cooling wind blows flow out.

[0023]Therefore, in the rotator of the salient pole form dynamo-electric machine constituted in this way, By considering it as the maximum, the air capacity of the cooling air which flows out of the both sides of the coil bracket 9 formed in the center section of each field coil 5. Since rating and the temperature of the center portion of the field coil which influences a life can be lowered in this dynamo-electric machine, the obstacle of the miniaturization of this dynamo-electric machine or reinforcement is cancelable.

[0024]Next, it is a vertical section enlarged drawing showing a 2nd embodiment of the rotator of the salient pole form dynamo-electric machine of this invention, and drawing 3 corresponds to drawing 1 shown by drawing 6 shown by the Prior art, and a 1st embodiment, and is a figure corresponding to claim 2 and claim 3.

[0025]in drawing 3, a different place from drawing 6 shown by the Prior art is having excluded the coil aggressiveness raising board 8B and the helical compression spring 7 which were shown by drawing 6, and having incorporated only the section C character-like flat spring 14, and others are the same as that of drawing 6.

[0026]That is, although the lower insulating collar 12 shown by drawing 6 is included in the axis side of each field coil 5 in the rotator shown by drawing 3, the coil aggressiveness raising board 8B and the helical compression spring 7 are excluded.

[0027]In the rotator of the salient pole form dynamo-electric machine constituted in this way, Since the parts which cross a ventilation flue serve as only the hexagon head bolt 11 and resistance of a ventilation flue can be reduced, The air capacity of the cooling wind blows which flow out of a ventilation flue between each field coil can be increased, as a result, the rise in heat of each field coil can be suppressed further, and the obstacle of a miniaturization and reinforcement can be canceled.

[0028]Next, it is a vertical section enlarged drawing showing a 3rd embodiment of the salient pole form dynamo-electric machine of this invention, and drawing 4 corresponds to drawing 1 shown by a 1st embodiment mentioned above, and is a figure corresponding to claim 4.

[0029]In drawing 4, a different place from drawing 1 of the embodiment mentioned above is having formed the tunic 15 of the fluoro-resin to the contact surface with the field coil 5 of the coil aggressiveness raising board 8, and others are the same as that of drawing 1.

[0030]Rotator **** of the salient pole form dynamo-electric machine constituted in this way, Since friction generated between the coil aggressiveness raising boards 8 can be reduced by elasticity of this field coil 5 accompanying energization and a stop of the field coil 5 and the stress accompanying this friction can be reduced, Degradation of the insulating layer of the peripheral part of the field coil 5 can be suppressed, and the further miniaturization and reinforcement can also be attained.

[0031]Instead of this fluoro-resin, Teflon resin, Beth Bell resin, or polyimide resin may be adopted, and this tunic may also be given to a contact surface with the field coil of the flat spring 14 adopted by a 2nd embodiment.

[0032]

[Effect of the Invention]According to the invention corresponding to claim 1, two or more coil brackets are installed in the opposite portion of the field coil inserted in the field core above, A coil aggressiveness raising board is inserted in the ventilation flue formed between the field coil and the rotor axis, The coil spring which presses a coil aggressiveness raising board to a field coil is inserted between this coil aggressiveness raising board and a rotor axis, In the rotator of the salient pole form dynamo-electric machine with which the bolt which presses a coil bracket to a field coil was inserted into the coil bracket and the coil aggressiveness raising board, and the coil spring, The through hole which makes the length of a coil aggressiveness raising board the length inside a field coil mostly, and opens between the opposite portions of a ventilation flue and a field coil for free passage by forming in a coil aggressiveness raising board. Since the rise in heat especially in a center portion of the field coil was suppressed while reducing the number of component parts, the difference of the rise in heat by the part of a field coil can be reduced, and the rotator of the salient pole form dynamo-electric machine which can attain miniaturization and reinforcement can be obtained.

[0033]According to the invention corresponding to claim 2, two or more coil brackets are installed in the opposite portion of the field coil inserted in the field core, In the rotator of the salient pole form dynamo-electric machine with which the bolt which a coil aggressiveness raising implement is inserted in the ventilation flue formed between the field coil and the rotor axis, and presses a coil bracket to a field coil was inserted into the coil bracket and the coil aggressiveness raising implement, By using a coil aggressiveness raising implement as flat spring, while reducing the number of component parts, Since resistance of the ventilation flue was reduced and the rise in heat of the hot section of a field coil was suppressed, the difference of the rise in heat by the part of a field coil can be reduced, and the rotator of the salient pole form dynamo-electric machine which can attain miniaturization and reinforcement can be obtained.

[0034]By what the both sides by the side of an opening make flat spring for the shape of a section C character which contacts a field coil according to the invention especially corresponding to claim 3. Since resistance of the ventilation flue was reduced and the rise in heat of the hot section of a field coil was suppressed while reducing the number of component parts, the difference of the rise in heat by the part of a field coil can be reduced, and the rotator of the salient pole form dynamo-electric machine which can attain miniaturization and reinforcement can be obtained.

[0035]By what the resin coating of a low friction coefficient is formed in a contact surface with a coil aggressiveness raising board or the field coil of flat spring for according to the invention corresponding to claim 4. Since the stress of the insulating material in a contact surface with the coil aggressiveness raising board and flat spring which are generated by elasticity accompanying energization and a stop of a field coil was stopped, The stress of the coil prevention part accompanying a usual stop of a field coil can be reduced, and the rotator of the salient pole form dynamo-electric machine which can attain miniaturization and reinforcement can be obtained.